

What is Claimed is:

1 1. A frequency synthesizer, comprising:
2 a divider for receiving a reference clock with a substantially fixed period and
3 generating an output clock with a time-varying period;
4 a noise-shaped quantizer for quantizing a period control word to a time-varying
5 value in response to said output clock fed from said divider so that said divider
6 generates said output clock by means of dividing said reference clock by said
7 time-varying value; and
8 a filter for substantially filtering out jitter from said output clock.

1 2. The frequency synthesizer as claimed in claim 1, wherein said period control
2 word has a bit resolution greater than that of said time-varying value.

1 3. The frequency synthesizer as claimed in claim 1, wherein said noise-shaped
2 quantizer is a delta-sigma quantizer.

1 4. The frequency synthesizer as claimed in claim 1, wherein said filter is an
2 analog phase locked loop (PLL) device as a low pass filter for removing high
3 frequency jitter from said output clock.

1 5. A frequency synthesizer, comprising:
2 a noise-shaped quantizer for quantizing a period control word to a time-varying
3 value; and
4 a divider for generating an output signal by means of dividing a reference signal
5 by said time-varying value, said output signal feeding back to said noise-shaped

6 quantizer so that said noise-shaped quantizer generates said time-varying value in
7 response to said feedback output signal.

1 6. The frequency synthesizer as claimed in claim 5, further comprising a filter for
2 of significantly filtering out jitter from said output signal.

1 7. The frequency synthesizer as claimed in claim 6, wherein said filter is an
2 analog phase locked loop (PLL) device as a low pass filter for removing high
3 frequency jitter from said output signal.

1 8. The frequency synthesizer as claimed in claim 5, wherein said reference signal
2 is a reference clock with a substantially fixed period.

1 9. The frequency synthesizer as claimed in claim 5, wherein said output signal is
2 an output clock with a time-varying period and a substantially precise long-term
3 average frequency.

1 10. The frequency synthesizer as claimed in claim 5, wherein said period control
2 word has a bit resolution greater than that of said time-varying value.

1 11. The frequency synthesizer as claimed in claim 5, wherein said noise-shaped
2 quantizer is a delta-sigma quantizer.

1 12. A frequency synthesizer, comprising:
2 means for quantizing a period control word to a time-varying value; and
3 means for generating an output signal by means of dividing a reference signal by

4 said time-varying value, said output signal feeding back to said means for quantizing
5 said period control word so that said time-varying value is generated in response to
6 said feedback output signal.

1 13. The frequency synthesizer as claimed in claim 12, further comprising means
2 for of significantly filtering out jitter from said output signal.

1 14. The frequency synthesizer as claimed in claim 13, wherein said means for
2 filtering the jitter is an analog phase locked loop (PLL) device as a low pass filter for
3 removing high frequency jitter from said output signal.

1 15. The frequency synthesizer as claimed in claim 12, wherein said reference
2 signal is a reference clock with a substantially fixed period.

1 16. The frequency synthesizer as claimed in claim 12, wherein said output signal
2 is an output clock with a time-varying period and a substantially precise long-term
3 average frequency.

1 17. The frequency synthesizer as claimed in claim 12, wherein said period
2 control word has a bit resolution greater than that of said time-varying value.

1 18. The frequency synthesizer as claimed in claim 12, wherein said means for
2 quantizing said period control word is a delta-sigma quantizer.